CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

1.   (Currently Amended) A method for determining an approximate location of a target node ~~attached~~ communicatively coupled to a network, the method comprising:

determining ~~communication~~ reference latencies amongst a plurality of reference nodes, the reference latencies including information regarding communication latencies amongst the plurality of reference nodes and excluding information regarding communication latencies between the target node and any one of the plurality of reference nodes;

measuring ~~the communication~~ a target latency between the target node and at least one of the reference nodes, the target latency including information regarding communication latency between the target node and the at least one reference node; and

approximating a geographic region within which the target node is located ~~according to the communication latency between the target node and at least one of the reference nodes,~~ wherein the approximating a geographic region comprises accessing reference latencies associated with the at least one reference node and comparing the reference latencies with the target latency to thereby approximate the geographic region.

2.   (Currently Amended) The method of claim 1, wherein the determining ~~communication~~ reference latencies ~~amongst a plurality of reference nodes~~ comprises:

noting a start time;

conveying a ping directive to the network from a first reference node to a second reference node;

noting an end time when a response to the ping directive is received; and

determining the difference between the start time and the end time.

3. (Currently Amended) The method of claim 1, wherein the determining ~~communication~~ reference latencies ~~amongst a plurality of reference nodes~~ comprises:

transmitting a sounding message from a first reference node, wherein the sounding message includes a time-to-live protocol parameter and an initial time-to-live value;

receiving the sounding message in a second reference node; and

determining a hop-distance according to a time-to-live value stored in the protocol parameter and the initial time-to-live value included in the received sounding message.

4. (Currently Amended) The method of claim 1, wherein the determining ~~communication~~ reference latencies ~~amongst a plurality of reference nodes~~ comprises determining communication latencies amongst a plurality of reference nodes on a periodic basis and generating a moving average according to the periodic communication latency determinations.

5. (Currently Amended) The method of claim 1, wherein the determining ~~communication~~ reference latencies ~~amongst a plurality of reference nodes~~ comprises determining communication latencies amongst a plurality of reference nodes for a plurality of time-slots.

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6.   (Currently Amended) The method of claim 1, wherein the measuring ~~the communication~~ a target latency ~~between the target node and at least one of the reference nodes~~ comprises:

noting a start time;

conveying a ping directive to the network from a first reference node to the target node;

noting an end time when a response to the ping directive is received; and

determining the difference between the start time and the end time.

7.   (Currently Amended) The method of claim 1, wherein the measuring ~~the communication~~ a target latency ~~between the target node and at least one of the reference nodes~~ comprises:

transmitting a sounding message from the target node, wherein the sounding message includes a time-to-live protocol parameter and an initial time-to-live value;

receiving the sounding message in a reference node; and

determining a hop-distance according to a time-to-live value stored in the protocol parameter and the initial time-to-live value included in the received sounding message.

8.   (Currently Amended) The method of claim 1, wherein ~~approximating a geographic region within which the target node is located~~ the comparing the reference latencies with the target latency comprises identifying a first region surrounding a first reference node out to a latency distance to a second reference node

when the latency distance between the target node and the first reference node is less than the latency distance between the first reference node and the second reference node.

9.   (Currently Amended) The method of claim 8, ~~further~~ comprising identifying a union of the first identified region and a region surrounding the second reference node out to a latency distance to either ~~of~~ the first reference node ~~and~~ or a third reference node when the latency distance between the target node and either ~~of~~ the first reference node ~~and~~ or the third reference node is less than the latency distance between the second node and either ~~of~~ the first reference node ~~and~~ or the third reference node.

10.   (Currently Amended) A system for determining an approximate location of a target node ~~attached~~ communicatively coupled to a network, the system comprising:

a referencing unit capable of determining ~~the communication latency~~ reference latencies amongst a plurality of reference nodes, wherein the reference latencies include information regarding communication latencies amongst the plurality of reference nodes and excludes information regarding communication latencies between the target node and any one of the plurality of reference nodes;

a targeting unit capable of determining ~~the communication~~ a target latency from at least one of the reference nodes to the target node, wherein the target latency includes information regarding communication latency between the at least one reference node and the target node; and

an approximation unit that determines a region within which the target node is located ~~according to the communication latency between the target node and at least one of the reference nodes~~ , wherein the approximation unit comprises a latency

comparator that accesses reference latencies associated with the at least one reference node and compares the reference latencies with the target latency to thereby approximate the region.

11.   (Currently Amended) The system of claim 10, wherein the referencing unit comprises:

a controller that issues a send ping signal and issues a stop signal when it recognizes a ping response;

a start register that captures a start time according to the send ping signal;

an end register that captures an end time according to the stop signal;

an index register that captures source and destination indicators for a ping;

a latency differencing unit that generates a latency value according to the difference between a value stored in the start register and a value stored in the end register; and

a latency storage unit that stores the generated latency value in a location according to an index stored in the index register.

12.   (Currently Amended) The system of claim 10, wherein the referencing unit comprises:

a controller that causes a first reference node to transmit a sounding message;

a message capture register that captures a time-to-live protocol parameter and an initial time-to-live value from the sounding message as it arrives at a second reference node;

an index register that stores an index according to a source and destination

of the sounding message arriving at the second reference node;

a differencing unit that generates a hop-distance according to the

difference between the time-to-live protocol parameter and an initial time-to-live value;

and

a latency storage unit that stores the generated hop-distance in a location

according to an index stored in the index register.

13.   (Currently Amended) The system of claim 10, wherein the

referencing unit comprises:

a latency storage unit capable of storing one or more values indexed

according to addresses for a first reference node and a second reference nodes node;

a summing unit capable of adding a current latency value with one or

more values retrieved from the latency storage unit according to an index;

a multiplier capable of multiplying an output from the summing unit by an

inverse of the sum of one plus the quantity of values retrieved from the latency storage

unit, wherein the output of the multiplier is stored in the latency storage unit according to

the index.

14.   (Currently Amended) The system of claim 10, wherein the

referencing unit comprises a latency storage unit capable of storing one or more values

indexed according to addresses for a first reference node and a second reference nodes

node and according to a time-slot indicator.

15.   (Currently Amended) The system of claim 10, wherein the

targeting unit comprises:

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a controller that issues a send ping signal and issues a stop signal when it recognizes a ping response;

a start register that captures a start time according to the send ping signal;

an end register that captures an end time according to the stop signal;

an index register that captures source and destination indicators for a ping;

a latency differencing unit that generates a latency value according to the difference between a value stored in the start register and a value stored in the end register; and

a latency storage unit that stores the generated latency value in a location according to an index stored in the index register.

16.   (Currently Amended) The system of claim 10, wherein the targeting unit comprises:

a controller that causes the target node to transmit a sounding message;

a message capture register that captures a time-to-live protocol parameter and an initial time-to-live value from the sounding message as it arrives at a reference node;

an index register that stores an index according to a source and destination of the sounding message arriving at the reference node;

a differencing unit that generates a hop-distance according to the difference between the time-to-live protocol parameter and an initial time-to-live value; and

a latency storage unit that stores the generated hop-distance in a location according to an index stored in the index register.

17.   (Currently Amended) The system of claim 10, wherein the approximation unit comprises:

a location map that ~~that~~ transforms a reference node index to a geographic location;

a radius comparator that generates a first capture signal when a radius from a first reference node to a second reference node is greater than the radius from the first reference node to the target node; and

a first region register that stores a geographic location of the first reference node according to the first capture signal.

18.   (Currently Amended) The system of claim 17, wherein the radius comparator generates a second capture signal when a radius from a second reference node to either ~~of~~ the first reference node or a third reference node is greater than the radius from the second reference node to the target node, the system ~~further~~ comprising:

a second region register that stores a geographic location for the second node according to the second capture signal; and

a triangulation unit that generates an approximate location for the target node according to a location stored in the first and second region registers.